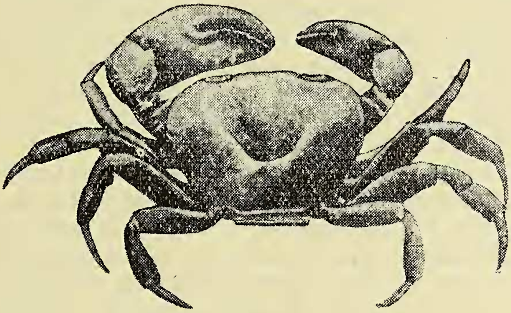
23. HUNTING THE LAND CRAB [*PARATELPHUSA GUERINI* (M.-EDW.)]

(*With a text-figure*)

Is he a friend, a foe, or a fifty-fifty? On the answer to this question must depend our treatment of this inmate of our farm. The answer is important, for the land crab forms a major part of the animal population of all farms within thirty miles or so of the west coast of India. Mr. McCann in his article in the Bombay Natural History Society's *Journal* (Vol. 39, p. 531) thinks the crab is unnecessarily maligned. He even thinks the crab is to some extent the cultivator's benefactor.



Paratelphusa guerini (M.-Edw.)

I had come to live in Chembur with an open mind, 30 years ago. My experience in my garden soon convinced me that the crab and I could not live peacefully together. In the first year in June I planted a number of vegetables and papayas. As soon as the seedlings came up to a height of two or three inches, they were snipped off. I sowed again and replanted papaya seedlings. At the end of the rains, I had only 10% of my seedlings left. The only vegetables I could get from my labours was *tendli* (snipped off often, but strong enough to go on producing new tendrils), and a few brinjals. Cold season flowers and vegetables sown in September and October met with the same fate. Only the seeds sown late in November or in December survived, and even these not without casualties. Whether crabs do considerable damage to paddy or not is uncertain. I have seen very considerable damage to seedlings, and to plants along the bunds of fields, but what the overall damage to the crop is, it is difficult to estimate in the absence of statistical research. I have been growing fields of mango seedlings, and amongst these my estimate of the damage is 15 to 20%. With this experience behind me, it is no wonder I feel no love or friendliness for the crab. At the end of my first year I burnt with a desire to exterminate this pest.

There is another direction in which the crab is our enemy, *par excellence*. In parts of my farm, I had to prepare raised irrigation channels. These were continuously pierced by this enemy and water leaked out and reached wrong places. Daily patching and repair was necessary, and took much time and labour. I was interested in another farm where a seven-foot high bund kept back the sea water. It was a mile long and had cost a huge sum. Was it able to give the needed protection? The piercing of the bund by crabs made the bund almost useless and the annual repairs cost several thousand rupees. Is the crab my friend? Can I love him?

Mr. McCann thinks there are a number of benefits the cultivator receives from the crab. He mentions two particularly, and in both there is an error, I think. (*a*) He thinks that on death the crab enriches the soil with lime from its shell. As the crab had previously taken the lime from the same soil, he cannot be said to enrich the soil. (*b*) He suggests that the crabs, by burrowing in the soil, serve the same useful purpose as the earthworm. As the crab holes are mostly in field bunds, or along the banks of nallahs, the fields derive very little benefit from their digging.

We are therefore driven to the conclusion that the crab is neither a friend, nor a fifty-fifty. He is enemy pure and simple. The farmer must exterminate him by whatever means possible. There is no safety for seedlings for a period of six months every year unless the crab is hunted ruthlessly and exterminated.

War of extermination had therefore to be declared on our farm. Before actually declaring war, I made inquiries from the entomologists and agriculturists for information in regard to the crab and means for its extermination. From time to time I received suggestions. The first one that seemed reasonable came from the Agricultural Department who suggested the use of carbon disulphide. A teaspoonful had to be poured down the burrow, and the entrance plugged with wet clay. I tried this method for two seasons, with so little effect, and with so much cost, that I had to beat a strategic retreat. Later I tried blowing cyanogas into the burrows and sealing them off. This was no more successful. I carried my inquiry to chemical manufacturers. I was offered profuse advice, and told in turn to use lead arsenate, D.D.T., Cymag, Folidol and a number of other patent preparations, one as unsuccessful as the other. By none of these methods and preparations could I succeed in killing more than a hundred crabs in a season on my farm. I felt frustrated and helpless. 'Could nothing rid me of this turbulent pest'? I started occasional attacks with sticks. This was much more effective than chemicals. I offered a reward to any one who would bring me 100 dead crabs. In a full season we counted 500 dead. Was this the best we could do? I started watching the movements and behaviour of the enemy. When and where are they most defenceless? There are two periods during the monsoon, when the greatest success can be achieved. The first is at the beginning of the monsoon. Coming out after their six or eight months of underground life, they are slow and hungry and in the case of females, loaded with young ones. There is very little of grass and weeds, and they have to wander far from their burrows to forage for food. As soon as nallahs begin to flow, they swarm in, and will not run away in a hurry. Now is the opportunity to use the big stick. Within the space of an hour, you may destroy a hundred and more over a hundred-foot stretch. Unfortunately in this slaughter many babies get away from their mothers' abdomens. Such a period of weak defence may last one to three weeks, depending on the rainfall.

The second period for a wholesale slaughter is in September when the young ones have become sufficiently visible and have dug their independent holes. Such holes along the banks of nallahs are shallow, and by a light digging you can expose the crab. At this time too, a hundred crabs may be easily accounted for within a space of a hundred feet.

After the early monsoon slaughter, the crabs' defence is much more effective. They do not stray far from their burrows and their quickness, keen eyesight and vigilance, enable them to retreat into their holes at sight of the hunter. Now it is no more possible to bludgeon the beast, and a new technique must be adopted. I used an airgun fairly successfully; one had to shoot from about 15 to 20 ft.'s distance. I also started using an 8 to 9 ft.-long hollow bamboo. With this I started harpooning the crabs. The crabs became more and more wary; still I was quite successful. My technique developed in another direction. Instead of striking directly at the crab, I first decided which hole the crab belonged to, and thrust the bamboo in such a manner as to block the entrance. I was either able to score a direct hit as the crab was retreating, or I prevented it getting into its hole, thus enabling me to attack it with my foot. This method gave me a fraction of a second extra time and increased the chance of a kill. Thus, in results it made a big difference. In certain positions when I had to use the harpooning method from a long distance on the flat, or if I had to attack down a bank, it was not possible to block the hole; here it was best to give the crab a smart push across the hole, and in doing so, one either kills the crab outright, or pushes it sufficiently far from its hole for a second and a third attack.

Approaching the enemy is a skilful job. In a few days the crabs within an area began to recognise me as their Enemy No. 1, and then approach had to be very wary, and varied. The quarry spots us from a distance of quite 60 ft., and rushes into its burrow before any form of attack becomes possible. If in approaching, you can keep a bush, a tree or even tuft of tall grass in between, you can get to within 10 ft. which is a striking distance. A quick rush gets the crab flurried, and through fright he loses his bearing in relation to his burrow, and is then done for. He runs here and there and provides a good opportunity for us to strike. As usually there are several crabs within a short distance of each other, one often makes the mistake of shifting the eye from the chosen quarry when approaching. This is fatal; we lose all. The eye must be inexorably fixed on one only, and all attention concentrated on that one.

In planning an attack, the senses possessed by the crabs and their normal behaviour require to be studied, as one may well imagine. Sight is extremely keen, and their wandering eyes seem able to see things in all directions at one and the same time. On the flat, even at a distance of sixty feet, the crab recognises his enemy, and nearer approach becomes difficult. With this keen eyesight there is distinct evidence of a working mind. I have noticed that if a crab is on the opposite bank of a nallah, and I start to walk round to its side by a circuitous route, the crab invariably disappears. He evidently decided I was coming round to attack him. The crab's sense of smell is utilized by the villagers for catching him with a bait of fish or meat. Can the crab hear? I feel certain he does. Often have I noticed that as soon as I tread on twigs and make a crackling sound, the enemy disappears. It is common knowledge that if you approach a crab by night with a lantern or a torch, he does not run away easily. Does the light blind him, or is he paralysed with fear? Or does his natural instinct of safety at night make him unable to think differently even in the presence of evidence to the contrary? One sees villagers making use of this failing for catching crabs.

Crabs often have more than one entrance to their burrows. Possibly this is one of their defence tactics. If one entrance is blocked, or an enemy enters through one, they can escape through the other.

With my way of attack, two entrances which are often within a few inches of one another, are a disadvantage: as soon as I see the crab entering through one, I thrust my stick deep into the other. I thus block the passage to the depths: then I press my stick towards the other entrance; that passage gets narrower and finally the crab is forced to rush out. This gives me the opportunity to attack by foot.

What did I achieve by all these methods of destruction? To gauge this, I must inform you that my farm is 5½ acres of which one acre is occupied by buildings, roads, stables, wells etc., and the area where crabs could live, would be just over four acres. Active, organised warfare against crabs by my methods was started here in 1951. On this area of four acres I was able to account for 3,000 crabs in the first year, 1,000 in the second year, 800 in the third and 600 in the fourth year. Considering that as time passed, I was developing more and more skill and ingenuity, the fall in the number of kills shows how definitely the crab population has been reduced. I may well claim that I have checked and controlled the crab menace on my farm. Now, even in the monsoon my seedlings have a good chance of survival. The number of crabs I spot on my rounds, has fallen to a fraction.

This brings me to the question of density of crab population in the Konkan. I have repeatedly counted the number of burrows per 100 sq. ft. on my land, and I estimated the density in 1950 as 1,500 to the acre. At the end of the 1954 season, my estimate for my farm is 200 per acre. Fifteen hundred crabs let loose in the midst of an acre of seedlings will do an enormous amount of damage, and they do. Even the 200 are 199 too many, and we hope to see the 199 wiped out. Can we expect a 100% success? No. Crabs spread from neighbouring areas and many are carried to us by the rushing waters of nallahs. I feel confident however that with energy and vigilance, numbers can be kept down sufficiently low to allow cultivation to be carried on profitably and with safety.

A few points in regard to crabs are interesting. What age do they live to normally? I would state unhesitatingly that the normal life is three years. In the first season the young ones grow to half size; next season they complete their growth; in the third they produce their young in June and die before the end of the monsoon. In the second season crabs mate in September, incubate during their underground existence, and the mothers emerge next June loaded with young.

The food of crabs is mostly vegetarian, specially young seedlings of all kinds. They do eat fish, meat and insects also, but this a very minor part of their food. I have very rarely seen animal food in the jaws of a crab.

That crabs must have enemies, parasites and diseases may be taken for granted. From my observations, I would not say that the crab is surrounded by enemies. Man is certainly Enemy No. 1. Although I have seen kites and toads capturing crabs, this is not a very common occurrence. During the last five years, I have spent about 500 hours, chasing crabs, but have only twice spotted a kite carrying off a crab, and similarly on two occasions I have seen a toad with a crab in its mouth. As, however, I see many crab holes in October, occupied by toads, I take it that toads do hunt the crab.

I do not claim that my method of crab destruction could be practical on large farms, except as supplementing attack by poisons. The farms in our country generally are quite small and I am convinced that if the cultivators are zealous in hunting down this pest, they will be able to achieve sufficient success and security to surmount the risk to and destruction of their monsoon seedlings.

CHEMBUR,
BOMBAY,
January 4, 1955.

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24. *APUS* (CRUSTACEA: PHYLLOPODA), A NEW HOST FOR PARASITIC NEMATODES[1]

While examining a sample of *Apus orientalis* Tiwari from Panchgani, very obligingly made over to me by Shri Humayun Abdulali of the Bombay Natural History Society, I came across two specimens of what looked like larval stages of some nematode. The specimens were lying coiled up in the digestive tract in the abdominal region of the host.

The number of crustacean interhosts of parasitic nematodes from India is very small Bayliss[2] has listed the following crustaceans acting as interhosts for larval stages of nematodes recorded from India (before partition), Burma and Ceylon.

NAME OF THE HOST	PARASITE
Uca manii (Crab)	*Rhabdochona uca*
'Prawn' (Macrura)	*?Eustrongyloides* sp. (larva)
Cyclops hyalinus (Copepoda)	*Dracunculus medinensis* (larva) *Camalus sweetei* (larva)
Cyclops leuckarti (Copepoda)	*Dracunculus medinensis* (larva) *Camalus sweetei* (larva) *Camallanus* sp. (larva)
Cyclops vermifer (Copepoda)	*Dracunculus medinensis* (larva)
Cyclops sp. (Copepoda)	*Gnathostoma spinigerum* (larva)

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[1] Published with the permission of the Director, Zoological Survey of India.

[2] Bayliss, H. A. (1939): Faun. Brit. India; Nematoda, **2**.